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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,676	04/19/2001	Robert R. Hayes	B-4093 618554-9	8155

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EXAMINER

MENEFEY, JAMES A

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application N .</b>	<b>Applicant(s)</b>
	09/838,676	HAYES, ROBERT R.
	<b>Examiner</b>	<b>Art Unit</b>
	James A. Menefee	2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 10 December 2002.

2a) This action is **FINAL**.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-26 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-26 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

  
**PAUL IP**  
 SUPERVISORY PATENT EXAMINER  
 TECHNOLOGY CENTER 2800

**Application Papers**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on 10 December 2002 is: a) approved b) disapproved by the Examiner

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.

4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

In response to the amendment filed 10 December 2002, claim 9 is amended and claims 24-26 added. Claims 1-26 are pending.

### ***Drawings***

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 10 December 2002 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

The Patent and Trademark Office no longer makes drawing changes. See 1017 O.G. 4. It is applicant's responsibility to ensure that the drawings are corrected. Corrections must be made in accordance with the instructions below.

## **INFORMATION ON HOW TO EFFECT DRAWING CHANGES**

### **1. Correction of Informalities -- 37 CFR 1.85**

New corrected drawings must be filed with the changes incorporated therein. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings

should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

**2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.**

All changes to the drawings, other than informalities noted by the Draftsperson, **MUST** be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings **MUST** be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes.

**Timing of Corrections**

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.185(a). Failure to take corrective action within the set (or extended) period will result in **ABANDONMENT** of the application.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-26 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are as follows: There is not disclosed any means of generating laser emission in the structures. The structures include “a laser cavity producing laser light”, but there is nothing in the structures that suggests that this will be the case, i.e. there is no active

medium that will generate light. Thus, lacking this essential element, it is unclear whether the laser will function properly.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 9, 11, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Shipman et al. (US 4,665,526). Shipman discloses the invention as follows; see Figs. 1-3 and the discussion thereof:

Regarding claims 1 and 9, Shipman discloses a laser comprising a laser cavity having electrically sensitive material, a width direction, and a length direction, and producing laser light propagating substantially perpendicular to the length dimension. There are means 10,12,14,16,18,20 for applying a uniform electric field in a direction perpendicular to the direction of propagation of laser light and having the same intensity at any one point in time along the length of the cavity.

Regarding claims 2-3 and 15, the means are a traveling wave structure including two electrodes, the traveling wave structure being equal to or greater than the length and width of the laser cavity.

Regarding claims 6, 11, and 13, the laser is side pumped by the electrical discharge.

Claims 1, 6, 9, 11, 13, are rejected under 35 U.S.C. 102(b) as being anticipated by Hundstad et al. (US 4,064,465). Hundstad discloses the invention as follows; see Figs. 2A and the discussion thereof:

Regarding claims 1 and 9, Hundstad discloses a laser comprising a laser cavity having electrically sensitive material, a width direction, and a length direction, and producing laser light propagating substantially perpendicular to the length dimension. There are means 58,56 for applying a uniform electric field in a direction perpendicular to the direction of propagation of laser light and having the same intensity at any one point in time along the length of the cavity.

Regarding claims 6, 11, and 13, the laser is side pumped by the electrical discharge.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shipman in view of Donon (US 4,258,335). Shipman discloses the limitations of the claims as shown above, but it is not disclosed that the traveling wave structure comprise a transmission line. Donon teaches a means for exciting a laser medium including transmission lines (abstract, background). It would have been obvious to one skilled in the art to use transmission lines to excite the laser medium as a matter of obvious engineering design choice, as transmission lines provide good excitation and may replace the electrodes of Shipman and Donon.

Claims 5, 7-8, 10, 12, 14, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shipman or Hundstad. Shipman and Hundstad disclose the limitations of the claims as shown above, but the following is not disclosed.

Regarding claims 5 and 10, it is not disclosed that the cavity is a semiconductor cavity. Semiconductor cavities are well known in the art. It would have been obvious to one skilled in the art to include the system in a semiconductor cavity because semiconductors provide effective lasing characteristics, as is well known.

Regarding claims 7 and 14, it is not disclosed that the cavity includes lithium niobate. Laser cavities are well known to include lithium niobate as a means for selecting a wavelength of the cavity. It would have been obvious to one skilled in the art to include lithium niobate so that one may change the wavelength of the emitted light, as is well known.

Regarding claims 8 and 17, it is not disclosed that the cavity includes an index grating. Laser cavities are well known to include index gratings as a means for selecting a wavelength of the cavity. It would have been obvious to one skilled in the art to include an index grating so that one may change the wavelength of the emitted light, as is well known.

Regarding claim 12, it is not disclosed that the laser is side pumped with light. Side pumping of laser mediums is well known in the art. It would have been obvious to one skilled in the art to end pump the laser medium as a matter of obvious design choice, as side pumping provides an effective means of pumping a laser, as is well known.

Claims 18 and 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shipman in view of the admitted prior art (APA). Shipman discloses the limitations of the claims as shown above, but the following is not disclosed.

Regarding claims 18 and 24, it is not disclosed that the cavity comprises longitudinally coincident gain and phase regions. The applicant teaches that such laser systems are well known in the art (prior art Fig. 3 and discussion on p. 5-6). It would have been obvious to one skilled in the art to make the laser system in such a way as it will create an FM laser with a flat response over an infinite bandwidth, as taught by the applicant.

Regarding claim 20, it is not disclosed that the traveling wave structure is terminated by an open circuit. However, Shipman shows on at least one side of the cavity the electrode stops at the edge of the external cavity, similar to that disclosed by the applicant, thus describing an open circuit.

Regarding claim 21, it is not disclosed that the cavity is a semiconductor cavity. However, this limitation is taught with motivation in the rejection of claims 5 and 10 above.

Regarding claim 22, Shipman discloses the laser cavity is being pumped by the traveling wave structure.

Regarding claim 23, it is not disclosed that the cavity includes an index grating. However, this limitation is taught with motivation in the rejection of claims 8 and 17 above.

Regarding claim 25, it is not disclosed that the traveling wave structure comprises the structures as claimed. However, such structures are well known in the art as usable as electrodes. In fact, applicant states on p. 14 that microwave striplines are well known in the art. Such electrodes will provide an equivalent operation of the device. It would have been an obvious art

known substitution of equivalents to use any of these well known electrodes in place of the electrodes of Shipman.

Regarding claim 26, Shipman discloses the traveling wave structure is tapered with the maximum width adjacent to the cavity.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shipman and APA as applied to claim 18 above, and further in view of Laakmann (previously cited US 5,602,865). Shipman and APA teach all of the limitations of claim 18 as shown above, but do not disclose that the traveling wave structure is terminated by an external impedance device having impedance equal to the characteristic impedance of the traveling wave structure. Laakmann teaches that it is well known to utilize feedback so that the impedances as claimed are matched, i.e. an effective external impedance will terminate the traveling wave structure. It would have been obvious to one skilled in the art to include such an external impedance because it improves the efficiency and stability of the laser, as taught by Laakmann.

### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wiegand, Jr. (US 3,666,982) and Murray et al. (US 5,684,821) teach lasers in which a

uniform discharge is provided, however this discharge is caused by a non-uniform electric field and thus these references cannot be applied. Salzmann et al. (US 4,166,252) discloses a laser having traveling wave excitation, but again, a non-uniform electric field.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (703) 605-4367. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JM  
March 3, 2003

*Paul Ip*  
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